Amendments to the Claims

Claim 1 (currently amended) A distributed [~~diagnostic and prognostic~~] system for monitoring [~~the~~] a health status and integrity of at least one conduit[s], the system comprising:

a plurality of local health status and integrity monitory device each capable of inspecting the status of local individual conduits and conduit components, each local monitoring device having:

a central processor coupled wired or wirelessly to a plurality of local monitoring devices; the central [~~data~~] rocessor for receiving from each local monitoring device the local data concerning the its associated conduits, for generating a set of [~~weighting parameters~~] data for each local conduit monitoring device, and

for communicating the said of [~~weighting parameters~~] data to each local conduit monitoring device; and

a local [~~data~~] processor of each local monitoring device further for receiving the set of [~~weighting parameters~~] data, collecting data regarding the local conduit and analyzing the local data using a set of [~~weighting parameters~~] data for local [~~diagnostic and prognostic~~] health monitoring purposes; and

monitoring the health status of the system as a whole.

Claim 2. (currently amended) ~~An~~ A monitoring device for use in monitoring at least one conduit with at least one conductor for diagnostic purposes, the device comprising: at least one [~~programmed micro controller or other~~] processor for the purpose of acquiring the sensor information from a set of sensors and sensitized medium, conditioning and normalizing the sensor information based on parameters and environmental condition of the conduit, and for processing the normalized information to provide an output signal indicative of the [~~diagnostic~~] condition and an [~~the prognostic~~] estimate of remaining useful life of the conduit and conductors it monitors; [;] and

[~~a set of sensors having outputs coupled to the programmed processor, at least one sensor being an environmental sensor for providing environmental information indicative of the local~~

~~environmental condition, and sensors that are strips or strands of heterogeneous sensitized medium said medium either essentially opaque to signal transmission, or selected from the group of mediums that are capable of supporting or conducting an electrical current and voltage, an electromagnetic signal, an optical signal, an audio signal, and an indicating substance with the purpose to provide sensor information indicative of damage to the sensitized medium; with each sensor or strand of sensitized medium being positioned with respect to the conduit to provide information concerning the environment and damage and deterioration to the conduit; and means operatively associated with the programmed processor for operating the processor in a birth certificate mode wherein the outputs of the sensors are processed by the programmed processor and stored in as baseline operational parameters; and~~]

means associated with the [~~programmed~~] processor for operating the device in a monitoring mode, after the program has operated in the birth certificate mode, wherein the [~~programmed~~] processor acquires, conditions, and processes the outputs from the sensors, compares the processed outputs to the baseline operating parameters, and provides an indication of the [~~diagnostic~~] condition of the conduit based on the comparisons.

Claim 3. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes a strand that incorporates a mechanism as a means to mark location of damage [~~such as [but not limited to,~~] caused by fluorescent or phosphorescent debris [~~or a fluorescent dye~~].

Claim 4. (currently amended) The monitoring device of claim 2 wherein the [~~sensor set~~] of said monitoring device includes at least one temperature sensor. [~~and~~

~~the baseline operational parameters include the said temperature sensor: (i) means; (ii) variances; (iii) range; (iv) and the overall temperature spectrum characteristics of the conduit.~~]

Claim 5 (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one vibration [~~sensor.~~] sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.- [~~and the baseline operational parameters include the said vibration sensor: (i) means; (ii) variances; (iii) range; (iv) and the overall vibration spectrum characteristics of the conduit.~~]

Claim 6. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one [~~conduit~~] electro-magnetic interference (EMI) [~~sensor.~~] sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said EMI sensor: (i) means; (ii) variances; (iii) range; (iv) and the overall spectrum of EMI characteristics of the conduit.~~]

Claim 7 (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one [~~strand of~~] temperature sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said strand of temperature sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 8. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of corrosivity sensitized medium. [~~and the baseline operational parameters include the said strand of corrosivity sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall spectrum of corrosivity characteristics of the strand.~~]

Claim 9. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of chafing sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [

~~and the baseline operational parameters include the said strand of chafing sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 10. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of pressure sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said strand of pressure sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 11 (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of chemically sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said strand of chemically sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 12 (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of piezoelectric sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said strand of piezoelectric sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 13. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of base metal coated medium. [~~and the baseline operational parameters include the said strand of base metal coated medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 14. (currently amended) The set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of noble metal coated medium. [~~and the baseline operational parameters include the said strand of noble metal coated medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 15. (currently amended) A sensor of the set of sensors of [~~The device of~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of clad silica sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said strand of clad silica medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 16. (currently amended) A sensor of the set of sensors of [~~The device~~] claim [~~2~~] 43 wherein the sensor [~~set~~] includes at least one strand of [~~fluorescent~~] doped sensitized medium that evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena. [~~and the baseline operational parameters include the said strand of fluorescent doped sensitized medium: (i) means; (ii) variances; (iii) range; (iv) and the overall characteristics of the strand.~~]

Claim 17 (currently amended) The [~~apparatus~~] monitoring device of claim 2 further comprising a communication link, and a communication control circuit coupled to the programmed processor and to the communication link, the communication control circuit being adapted to communicate information and data over the communication link.

Claim 18. (currently amended) The apparatus of claim 2 further comprising a visual indicator for [~~coupled to the processor for receiving the output signal generated by the processor~~] providing a visual indication of the [~~diagnostic~~] condition of the conduit [~~based on the output signal~~]; and coupled to the centralized data processor of claim 1 for purposes of sending the output signal generated by the processor of said apparatus.

Claim 19. (currently amended) The sensitized media of a sensor of the set of sensors of [~~device~~] claim [~~2~~] 43 [~~providing~~] wherein the sensor provides a means for coupling to a plurality of conductors and connectors at spaced apart locations along the branches; and a terminator connected to a first connector; and,

a means to attach appropriate signals including, but not limited to, direct current or alternating current electricity, radio waves, audio signals, fluids, and beams of light; and a means to attach a signal analysis instrument.

Claim 20. (currently amended) The sensitized media of a sensor of the set of sensors of [~~device~~] claim [~~2~~] 43 wherein the sensor [~~in which~~] along with the signal generators with the signal detectors and the ~~microcontroller~~ processor of claim ~~3~~ 2 comprise a means to quantitatively measure changes in signals and secondary effects as a means to detect the presence, degree, and location of deterioration or damage to the insulation material.

Claim 21 (currently amended) The sensitized media of a sensor of the set of sensors of [~~device~~] claim [~~2~~] 43 wherein the sensor is made up of diverse sensitized media including hollow, filled or solid strands, fibers and strips made with combinations of inorganic, organic or man-made materials that evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 22 (currently amended) The sensitized media of a sensor of the set of sensors of [~~device~~] claim [~~2~~] 43 wherein the insulation material] comprises at least one [~~a mixture of dielectrics~~] dielectric and,

said sensitized media evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 23 (currently amended) The sensitized media of a sensor of the set of sensors of [~~device of~~] claim [~~2~~] 43 wherein the sensor is in coaxial relationship to the ~~insulated cores~~ conduit with linear, curvilinear, or helical format.

Claim 24. (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 is fabricated on an inner layer of the insulation and,

said sensitized media evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 25. (currently amended)- The sensitized media of a sensor of the set of sensors of claim [2] 43 is fabricated on an ~~the~~ outer surface of the insulation, and

said sensitized media evidences at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena when .

Claim 26. (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 ~~that~~ conduct electricity, and

said sensensitized media evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 27. (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 that conduct light, and,

said sensitized media evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 28. (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 that conduct electromagnetic waves and,

said sensitized media evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 29. (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 that evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena that conduct acoustic waves

Claim 30. (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 that act as optical waveguides.

Claim 31 (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 that act as optical transmission lines.

Claim 32 (currently amended) The sensitized media of a sensor of the set of sensors of claim [2] 43 when joined by a multiplicity of connectors to create a plurality of sections of said sensitized media that evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 33. (currently amended) The monitored by the monitoring device comprised of one or more non-insulated conducting strands.

Claim 34 (currently amended) The conduit monitored by the monitoring device of claim 2 comprised of one or more insulated conducting strands.

Claim 35. (currently amended) The conduit monitored by the monitoring device of claim 2 when joined by a multiplicity of couplings to create a plurality of sections.

Claim 36. The conduit monitored by the monitoring device of claim 2 the material whereof is comprised of a liquid.

Claim 37. The conduit monitored by the monitoring device of claim 2 the material whereof is comprised of ceramic.

Claim 38. The conduit monitored by the monitoring device of claim 2 the material whereof is comprised of metal.

Claim 39. The conduit monitored by the monitoring device of claim 2 the material whereof is comprised of plastic

Claim 40. The conduit monitored by the monitoring device of claim 2 the material whereof is comprised of glass

Claim 41. The conduit monitored by the monitoring device of claim 2 the material whereof is comprised of a concretion.

Claim 42 (currently amended) A method [~~diagnosing and prognosing the~~] for assessing a health status of conduits, the method comprising the steps of:

[defining] determining the requirements for monitoring the system of conduits;

defining the functions of the distributed computers, diagnostic [~~and prognostic~~] software to meet the requirements;

selecting the parameters to be sensed and monitored;

selecting the components consisting of electronics, hardware, software, firmware and set of discrete sensors and strips of sensitized medium to implement the functions;

designing and manufacturing [~~the~~] a form and fit of [~~the~~] a monitoring device comprised of said components;

applying, placing, attaching or embedding the monitoring [~~apparatus~~] device and sensors consisting of at least one strand of said sensitized medium along the length of [~~said~~] a conduit, wherein said strands of sensitized medium has a first end and a second end, said strands of sensitized medium being placed such that damage inducing factors [~~such as an solid object, gas, liquid, powder or electromagnectic waves~~] contact said sensitized medium prior to contacting a conduit;

determining by a combination of measurement by signal processing and deductive algorithms whether, when [~~and~~], where and to what extent said damage inducing factors have damaged each of said multiplicity of sensitized medium;

comprising the steps of:

[~~I~~] using said [~~apparatus~~] monitoring device to periodically monitor at least a portion of the said system of sensors of the system of conduits at given points in time over a first extended period and, for each point in time, storing in a digital memory a data couplet containing information concerning the parameters, and the point in time;

using analog circuits to condition, sample, hold, and digitize the signals from the said sensors into parameter values; and

forming tuplets that represent the time of the sample, identity of the sensor, and the parameter values;

using digital processors with logic expressions, statistical algorithms and algebraic algorithms to identify [~~couplets~~] tuplets having normal values within a predetermined range of parameter values; and

providing an indication of steady state characteristics if the readings for at least a predetermined number of [~~couples~~] tuples are within a first predetermined range of parameter values; and

providing a [programmed] diagnostic algorithm based on a-priori knowledge about failure modes and failure effects and inference of propagation of failure effect for assessing risk of damage to the sensor and extent of deterioration and damage to the monitored conduits; and

providing a [~~prognostic~~] probabilistic algorithm based on physics of failure or other knowledge for estimating the remaining useful life of the monitored conduits and components; and

providing a protocol for communicating the [~~information~~] parameters about sensed damage, deterioration, and [~~prognostic~~] information concerning [the] a health status and integrity of the monitored conduits, components and system; and

[~~II~~] performing a first test sequence on each of the multiplicity of sensitized medium for the purpose of forming a baseline of characteristic parameters of each said sensitized medium for future reference by measuring the [characteristics] characteristic parameters and storing the [characteristics] characteristic parameters in accessible storage medium or location for future use; and

[~~III~~] from time to time performing the same said first test sequence on each of the multiplicity sensitized medium;

making a test measurement for the purpose of determining if said measured characteristics are substantially equal to previously measured characteristics, the possible outcomes being:

[~~a~~] there is no measurable change to the sensitized portion of the medium; and

]

[~~b~~] there is measurable change to the sensitized portion of the medium; and

[e] the medium is disrupted, [~~i.e.~~] broken, eroded, cut through or dissolved;

choosing whether to repeat said step of [~~measuring and said step of determining at another point of said medium~~] test measurement of said sensitized medium;

if the choice is to repeat, then repeating said steps of measuring and determining;

[~~IV~~] with the digital processor, using a deductive algorithm along with any a priori probability information to:

process data from said measuring of said multiplicity of sensitized medium into characteristic information; and

determine any change of said characteristics from baseline characteristics; and

record the [information] parameters for later use; and

[~~choosing~~] choose whether to measure the position of the change;

if the choice is to measure then measure the location of the change using either direct calculation based on the response to the applied signal; or apply a measuring technique [~~such as reflectometry on a waveform conducting medium~~]; and record the measured value and temporal information if available; and

using a calculus estimate the degree of damage for each said sensitized media at each recorded point of damage, for each time if temporal information is recorded.

Claim 43 (new) A set of sensors that are sheets, strips or strands of at least one sensitized medium, said sensors so constructed that end-to-end said sensors are essentially opaque to electrical signal transmission; and

said sensors being positioned with respect to the conduit to provide information concerning the environment and real or potential damage and deterioration to the conduit; and

said sensors producing at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena; and

the characteristic parameters of said at least one Optical Phenomena are indicative of any stress or any damage to the sensitized medium; and

said sensitized medium selected from mediums that are capable of supporting or conducting an electrical current and voltage, electromagnetic signals, optical signals, audio signal, shock waves, and liquids with the purpose to provide a means for controls and stimuli to the said sensitized medium.

Claim 44 (new) The set of sensors of claim 45 wherein at least one sensor is constructed with a core that conducts at least one Optical Phenomena.

Claim 45 (new) The set of sensors of claim 43 wherein the set of sensors includes at least one sensor is constructed with at least one shock sensitized medium producing at least one Optical Phenomena.

Claim 46 (new) A sensitized media for use in constructing a sensor of the set of sensors of claim 43 that contain entities that create Optical Phenomena within the media.

Claim 47 (new) The set of sensors of claim 43 wherein at least one sensor is made with at least one optically sensitized medium producing at least one Optical Phenomena.

Claim 48 (new) Sensors of the set of sensors of claim 43 fabricated on a layer placed between conductors.

Claim 49. (new) A sensitized medium for use in constructing the set of sensors of claim 43 that is measurably affected by electricity to create at least one Optical Phenomena but which is constructed in a manner that does not form an electrically conductive circuit end-to-end.

Claim 50. (new) Signal generators of the monitoring device of claim 2 comprise a means to excite Optical Phenomena and quantitatively measure changes in signals and secondary effects caused by the Optical Phenomena generated in sensors it is connected to.

Claim 51. (new) a means operatively associated with the at least one processor of the monitoring device of claim (2) when said processor is digitally programmed for operating said processor in a registry certificate mode wherein the outputs of the sensors are processed and the results are stored as baseline operational parameters.

Claim 52. (new) The set of sensors of claim 43 wherein at least one sensor includes at least one hollow, filled or solid strands, fibers, strips and patterns made with combinations of inorganic, organic or man-made materials constructed in a manner which is not electrically conductive end-to-end, and supports conduction of at least one Optical Phenomena.

Claim 53. (New) A sensor of the set of sensors of claim 43 that includes at least one strand of chafing sensitized medium producing at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 54. (New) A sensor of the set of sensors of claim 43 that includes at least one strand of pressure sensitized medium.

Claim 55 (new) A sensor of the set of sensors of claim 43 wherein the sensor is comprised of one or more insulated conducting strands that evidence at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 56. A sensor of the set of sensors of the claim 43 where the sensitized media is comprised of one or more plastic cores which output Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 57. (new) A sensor of the set of sensors of the claim 43 where the sensitized media is Comprised of one or more glass cores which output Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Claim 58 (new) The set of sensors of claim 45 wherein at least one sensor is constructed with a central core that exhibits at least one Optical Phenomena when stimulated by a mechanism that causes the said Optical Phenomena.

Justification of Changes in Claims

Justification of claim 1: removal of diagnostic and prognostic language and simplification, and removal of weighting parameters replaced with the word "data"

Justification of claim 2:

Removal of set of sensors to be dependent on claim 2 as claim 43.

As inferred by the examiner, a programmed microprocessor is not essential it could be a hybrid computer, or analog computer, or PC computer, or a microprocessor (processor is a better word) and said processor does not necessarily need to be programmed, e.g. an analog processor.

Justification for changes to claim 4: requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 5: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 6: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 7: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 8: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 9: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 10: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 11: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 12: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 12: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 13: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 14: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 15: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 16: Changes about baselines requested by examiner; and adding optical phenomena which is the subject of this invention.

Justification for changes to Claim 17, wrong assignment of dependency (to be a part of the system.)

Justification for changes to claim 18: clarity and reference to the centralized data processor (claim 1)

Justification for changes to claim 19 to reference the set of sensors (claim 43), and add fluid pressure as a legitimate signal Justification of changes to claim 20 is removal of reference to micro controller

Justification for changes to claim 20: Changes adding optical phenomena which is the subject of this invention.

Justification for changes to claim 21: Changes adding optical phenomena which is the subject of this invention.

Justification for changes to claim 22: Changes to reference set of sensors and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 23: Changes to reference set of sensors and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 24: Changes to reference set of sensors and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 25: Previously shown in Figures and embodiment descriptions

Justification for changes to claim 26:: Changes to reference set of sensors and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 27:: This invention is about medium exhibit Optical Phenomena and incoherent light is a subdivision of light rays included in a previous claim.

Justification for changes to claim 28: Changes to reference set of sensors and adding optical phenomena which is the subject of this invention.

Justification for changes to claim 29: This invention is about medium exhibit Optical Phenomena and acoustic waves with sufficient power can excite Optical Phenomena

Justification for changes to claim 30: adding reference to set of sensors [43]

Justification for changes to claim 31: adding reference to set of sensors [43]

Justification for changes to claim 32: Changes to reference set of sensors and adding optical phenomena which is the subject of this invention.

Claim Justification for changes to claims 33 to 41 is proper reference the monitoring device of claim 2.

Claim 42 Justification: Was changed at the recommendation of the examiner.

Claim 43 Justification: This invention is about Optical Phenomena

Claim 44 Justification: This invention is about Optical Phenomena

Claim 45 Justification: This invention is about Optical Phenomena and there are well known entities like prisms, moire' fringe effects, and crazing that exhibit Optical Phenomena

Claim 46 Justification: to cover imperfections and entities that create Optical Phenomena within the media.

Claim 47 Justification: This invention is about medium exhibit Optical Phenomena

Claim 48 Justification Previously shown in Figures and embodiment descriptions

Claim 49 Justification: This invention is about medium exhibit Optical Phenomena and electricity is well known to produce Optical Phenomena especially in dielectric gases like neon.

Claim 50 Justification: Signal generators and their use in inciting Optical Phenomena are in the text. of the original application

Claim 51 Justification: Registry mode is a form of Birth Certificate mode but after the first entry. This is not a new concept, just an explanation of keeping histories.

Claim 52 Justification to add end-to-end condition from text.

Claim 53 Justification: Chafing is a mechanical action that can product a hole which allows the light stimulus to enter.

Claim 54 Justification: The pressure sensor of this type induces a phenomena but does evidence an optical phenomena

Claim 55 Justification Some insulation such as Polyamide exhibit phosphorescence which is an Optical Phenomena

Claim 56 Justification: Doping is mentioned in the original applications as a means to enable Optical Phenomena

Claim 57 Justification: Doping is mentioned in the original applications as a means to enable Optical Phenomena

Claim 58 Justification: This invention is about Optical Phenomena